THE

COMMON SCHOOL JOURNAL.

VOL. II. BOSTON, OCTOBER 15, 1840. No. 20.

PALMER'S PRIZE ESSAY.

[Continued from the last Number, page 302.]

CHAPTER V., CONCLUDED.

Arithmetic.

The same pernicious error, which was noticed in speaking of the mode of teaching reading and writing, prevails in this science, namely, a neglect of the foundation; a hurrying of the initiatory steps. Without clear, distinct notions of numeration, no satisfactory progress can ever be made in arithmetic; and yet there are schools, where it is not taught at all; where the pupil commences with addition, and is left to acquire a knowledge of the *local* value of figures as best he may. And even in those schools where it *is* taught, the subject is passed over too rapidly; valuable deductions, that might be drawn from it, being entirely omitted. What these are will appear in their proper place.

The four fundamental processes, addition, subtraction, multiplication, and division, are by no means sufficiently practised. In addition, in particular, after a while the columns ought to be long, such as the pupil will probably meet with when he comes to practise them in stores, counting-houses, banks, and other public offices; and instead of adding by single figures at a time, he should be accustomed to take from two to five figures at once; for, unless he can do this with ease, he will never be an expert accountant. This mode of adding will be found, after a little practice, to be more easy than the formal, tedious mode of taking one at a time. A great many abbreviations ought to be pointed out in multiplication; and the Italian method of performing division, now in use over all the continent of Europe, which employs only half the number of figures used in the old-fashioned way, ought also to be adopted.

The subject of decimal fractions is treated of, separately from that of whole numbers, in all our treatises on arithmetic, and in an advanced section of the book. This arrangement is highly exceptionable; and is, probably, the principal reason why so many complain of the difficulty of understanding decimals, when, in fact, the subject is so exceedingly simple. Many persons, who have gone through two or three courses of arithmetic, have declared, that they never could thoroughly understand decimals. Their extreme simplicity confuses them; as, from their position in the work, they are led to imagine, there *must* be something behind, which they do not see; something beneath the surface, which their efforts fail to bring to light; a notion, that confuses and mystifies the whole subject. Let us see whether any difficulty could possibly arise, if decimals were taught in connection with whole numbers.

And, first, let us suppose that notation of whole numbers had been ex-

plained to the pupil, so that he understood that figures increased tenfold in value by being moved one place to the left, and decreased tenfold by being moved to the right ; and that they were named accordingly, namely :

Millions.	H. Thous.	T. Thous.	Thous.	Hundreds.	Tens.	Units.
2,	4	3	7,	8	9	5

What difficulty could any child have, in understanding, that, when we had to place figures still further to the right, it became necessary to use a dot, (.) to show the place of units, which no longer occupied the right-hand place ; and that the same names were used for the numbers ten times, &c., less than units, as for those tenfold, &c., greater ; only that we added *th* to them ; the one to the left of units being called *tens*, that to the right, *tenths* ; the 2d to the left, hundreds, the 2d to the right, hundredths, &c.

If a number containing decimals were now written on the blackboard, say,

468,326.4589

the child would have no difficulty in naming the figures, if he were told always to begin with units. For, proceeding to the left, as in whole numbers, he would have 6 units, 2 tens, 3 hundreds, &c. ; or to the right, 6 units, 4 tenths, 5 hundredths, &c. It should also be explained, that he might either name them 4 tenths and 5 hundredths, or 45 hundredths ; 4 tenths, 5 hundredths, and 8 thousandths, or 458 thousandths, &c. It should then be *shown* to him, that, by moving the dot one, two, or more, places to the right or left, he would change the unit's place, and consequently every figure in the number would be decreased or increased, tenfold, a hundredfold, a thousandfold, &c. Finally, the reason should be given, for calling the figures, to the right of the units, *fractions*, and *decimal* fractions. All this would be perfectly intelligible to a class of children about six years old, if shown on the blackboard. Here would be a convenient place to show the use of the 0, commonly called cipher, but more properly *figure of place;* its sole use being, to show the *place* of the significant figures. Thus, let these four numbers be written on the board,

600 006 .600 .006,

and let it be explained, that the character 0 is of no use, unless it intervenes between some significant figure and the unit's place. The class should then be called on to point out, in which of these four numbers the character was necessary, and in which it was useless.

The repetition of this lesson on the blackboard, for three or four days in succession, would fix the fact thoroughly in the mind of the class, that *whole numbers and decimal fractions were named on the same principle ;* both, in fact, being *decimals*, or numbers reckoned by *tens.*

Let us next examine, in what consists the difference between addition, subtraction, multiplication, and division, of whole numbers and of decimals, so as to ascertain, whether it is better to teach them separately or together.

In addition of integers, figures of the same denomination are placed *over* each other, because it is most convenient, as those differing in denomination cannot be added together. For instance, if it be proposed to add 234, 156, and 798, together, we should place them thus :

234
156
798

because the figures 4, 6, and 8, being of one kind, namely, units, could be

put together ; and also, for the same reason, 9, 5, and 3, tens, and 7, 1, and 2, hundreds. We do *not* place them thus :

234
156
798

because the 6 and the 3 ; and the 8, 5, and 2 ; and the 9 and 1, being of *different* denominations, make neither 9, nor 15, nor 10, of any denomination. The same holds true of decimals ; and no intelligent child could, for a moment, be at a loss how to place them, if he knew how to place integers, and the reason why. The process of adding is precisely the same, in both ; and the tens of one denomination are considered as units in the next higher, also for the same reason ; namely, because ten of one denomination make one of the other. Why then should a distinction be made between addition of integers and of decimals, when there is no difference ?

Exactly the same remarks apply to subtraction. Let us therefore pass at once to multiplication, which should be elucidated by an example on the blackboard, like the following :

243687
842
487374
974748
1949496
205184454

Now, let us suppose that the multiplicand, instead of being a whole number, had a dot (.) between the 3 and 6 ; then, of course, we have used it as if it were 1000 times greater than it is ; consequently, our product is 1000 times too large, but can easily, as we have already seen, be made 1000 times smaller, by placing a dot between the two fours, which removes the unit's place from the first to the fourth figure from the right hand. Again : suppose that the multiplier, instead of 842, should have been 8.42 ; then we shall have multiplied by a number 100 times too large ; consequently, our product, being also 100 times too large, will have to be changed once more, by removing the dot two places more to the left, between the 1 and 8. By repeating a similar process and explanation, a few times on the blackboard, an intelligent child, unprompted, will come to the conclusion, that there must always be *as many decimal places in the product as in both factors ;* and, *vice versa*, as many in *both factors* as in *the product*. Now, multiplication of decimals differs from that of integers in no other respect, than in having a dot to show the place of units.

In division, let it be taken for granted, that the child knows that the divisor and quotient are factors of the dividend. Or, if he does not, he may learn it, by being asked, what two numbers are the factors of the third, in the following example in division :

8|24
3

Now, then, let us suppose that it is required to divide 24 by 8. The quotient, you observe, is 3. But suppose the number had been 2.4, what would the quotient then be ? The numbers 8 and 2.4 are given, and of course not to be altered ; then what is this 3 ? Recollect, you yourself found out, that there must be as many decimal places in both factors, as in the product. Now, you say that 2.4 is the product, in which there is one decimal place ; and, as there is none in the factor 8, how many must there be in the other factor ? One, you say ; that is, the quotient is 3 tenths.

But suppose our dividend or product had been .24 instead of 2.4. Here, then, the product having two decimal places, whilst there is none in the divisor-factor, of course there must be two in the quotient-factor. But, as

there is only one figure in the quotient, we must place a 0 for the other; and the question is, whether it should be put after it or before it. If we place it after it, and then place our dot .30, we find it to be useless, because it does not change the value of the 3; therefore, it must go before, .03.

The last possible case of any difficulty is, when the divisor is a decimal, thus .8, and the product, or dividend, a whole number. The rule that we discovered, above, was that there must be as many decimal places in the product, as in both factors. Now, there being one in the given factor and none in the product, we must put one in the product, but without changing its value; thus, 24.0. If we now perform the division, we shall have 30 for the quotient, which is the correct answer.

It will probably appear somewhat extraordinary to a child, that when 24 is *divided* by .8, the quotient should be larger than the original number, namely, 30; and this would be a proper place to explain the *apparent* contradiction, which may be done as follows: Dividing one number by another is finding how many times the one number is contained in the other. How many *ones* are there in 24? Answer, 24. But, as .8 is less than one, of course there must be more of them, namely, 30.

It is probable, that all this may appear a little complicated in the reading; but, when shown on the blackboard, it will be readily understood by every child who can understand division of integers; especially if they have been properly trained to habits of attention by the other exercises of the school.

Having thus shown, that, from their great similarity, decimals should be taught simultaneously with integers, or, at all events, alternately; that is, 1. Numeration of integers; 2. Numeration of decimals; 3. Addition of integers; 4. Addition of decimals, and so on; it may be proper to notice, in this connection, another error committed in most of our treatises on Arithmetic, leading to similar results; that is, leading students to *imagine* a difficulty, where there is none in reality. The error alluded to consists in making separate articles of addition, subtraction, multiplication, and division, of *Federal money*, as if they, in any respect, differed from the same processes in *decimals*. There is generally even an article devoted to *reduction* of Federal money; as if any thing more was necessary, in reducing one sort of coin into another, than a mere change of the unit's place. Thus,

45678 mills

may be changed into cents, by placing a dot between the 7 and 8, thereby dividing it by 10, the number of mills in a cent; into dimes, by placing the dot between 6 and 7; into dollars, by placing it between 5 and 6; and into eagles, by placing it between 4 and 5; reduction descending carrying the dot backwards on the same principle.

There is also a *deficiency*, when treating of Federal money, in not explaining the etymology of the names of the coins, which, when understood, makes the subject perfectly plain. It might be done thus: a dollar is considered the unit; the meaning of *dime*, is tenth; of *cent*, hundredth; of *mill*, thousandth; consequently,

44.368 dollars

may be read, either 44 dollars, 3 tenths, (or dimes,) 6 hundredths, (or cents,) and 8 thousandths, (or mills:) or 44 dollars, 36 hundredths, (or cents,) and 8 thousandths, (or mills;) or 44 dollars, and 368 thousandths, (or mills;) or, finally, as 10 dollars make an eagle, (so called, from an eagle being the ensign or arms of the United States,) the 44 dollars may be considered as 4 eagles and 4 dollars.

Before leaving the subject of decimals, it may not be improper here to enter a protest against the novelty introduced by some authors, of using a comma instead of a dot, to indicate the place of units; that character being already appropriated to a different purpose, namely, the division of large

numbers into series of threes, for the convenience of reading them readily. Thus, when the comma is used for both, it is impossible to say whether

346,789

stands for 346 thousand and 789 ; or 346 and 789 thousandths. Other authors, again, have very improperly taken the liberty of leaving out the separating commas altogether, in large numbers ; thus rendering them exceedingly difficult to be read. The eye can readily distinguish four figures, at a glance. But, when the number consists of more than four, they should always be separated by commas, into series of threes.

But the chief impediment to the thorough acquisition of arithmetic lies in the multiplicity of *Rules*, with which our popular treatises are burdened. Perhaps it would be well, if these books consisted merely of a collection of questions, systematically arranged, so as to lead the students into a knowledge of the principles of the science, somewhat on the plan of Colburn's 'Mental Arithmetic.' Every teacher ought to be able to give a clear demonstration of the whole subject on the blackboard, on simple, philosophical principles. If this were properly done, children might be completely versed in arithmetic, by the time they reached the age of eight or nine. A specimen will be given, in another part of the treatise, of the manner of conveying this sort of practical instruction on the blackboard, and, at the same time, a more simple and natural classification of the whole subject will be offered. We shall attempt to supply, also, a very important omission on the part both of books and teachers, namely, the different modes in which the working-out of questions may be shortened by cancelling, division, &c. By such abbreviations, not only a vast amount of time and labor is saved, but several of the most important principles of arithmetic are brought out and elucidated.

The last error to be noticed, on the subject of written arithmetic, is the prevailing custom of furnishing ready-made tables of addition and multiplication for the student. This is probably one of the most injurious species of labor-saving machinery. The habit of relying on ready-formed tables, instead of forming them for one's self, may be classed with that of depending on mechanical rules, and the practice of getting the teacher to work out the difficult problems, instead of simplifying the subject by a few leading questions. These are perversions, which tend to convert a science, that is probably one of the best adapted to lead the mind into trains of reasoning and habits of patient investigation, into a means of leading youth into implicit, blind reliance on the dicta of books and teachers : an admirable method of preparing the community to become the ready dupes of demagogues, quacks, and fanatics.

Mental Arithmetic.

This branch of the science of numbers, properly taught, has a tendency to produce the most valuable results. Colburn's little work on this subject is by far the best that has yet appeared. It is nothing but a mere collection of questions, but so admirably arranged, that the student can proceed onward, step by step, from the simple question of how many fingers are on the hand, to the most complicated and abstruse problems, almost without the aid of a teacher, and all the while forming his own rules. But the acquisition of arithmetic is one of the smallest advantages that may be derived from the proper use of this work. If the child is not allowed to study it ; if he is never allowed to see the questions at all ; and if they are never read to him till his class is called upon to recite ; and if he is regularly required to state the manner in which he worked them and his reasons for the adoption of such a course, he will thus acquire habits of *strict attention* to the person by whom he is addressed ; of *patient investigation*, and of *examining and noting the operations of his own mind ;* habits of infinitely more

value than the mere acquisition of science ; habits, in fact, which will give him the mastery over all the sciences at will.

But, by the mode in which this book is generally used in schools, all these important advantages are lost. The pupil is allowed to study out the questions at his leisure ; sometimes, even to work them out on the slate, and then, committing the answers to memory, or annexing them to the questions, he is merely expected to repeat them, when called upon at his recitation. This unfortunate result has generally arisen, no doubt, either from the incapacity or slothful habits of the teacher. For of course it is necessary, in order to secure all the advantages of this study, that the teacher should himself perform the operation simultaneously with his pupil.

The most serious error, however, into which teachers have fallen on this subject, has arisen from considering mental as a *substitute* for written arithmetic, in place of an *introduction* and an *assistant* to the latter. A moment's reflection, one would think, would show that it could never be depended on, for any but petty business-transactions. Long accounts, and all questions in which many large numbers are involved, are totally unsuited to mental arithmetic. A knowledge of written arithmetic, consequently, is an indispensable requisite of a good education.

Geography, History, Natural History, Grammar, &c.

The higher branches of education are taught in the schools, in a much more satisfactory manner than the fundamental studies which have been noticed ; and in some degree serve to rub off the rust, acquired in pursuing the initiatory steps. But there is one error, which runs more or less through the whole system ; namely, the charging the memory with words instead of ideas. In all studies, there is too much of what is called *committing to memory*. This is an error, however, which it is believed will disappear, as soon as a more rational plan is adopted, of teaching the fundamental branches. When the mind shall be developed and disciplined, by a proper mode of acquiring reading and arithmetic, the folly of attaching value to the mere repetition of words will be generally seen and acknowledged.

[To be continued.]

MEMOIR OF DR. NATHANIEL BOWDITCH.

[Continued from the last Number, page 309.]

CHAPTER VI.

From 1800 to 1803,—aged 27—30.

Second marriage : character of his wife.—Mr. B. engages in commerce, for two years.—School committee.—East-India Marine Society : a description of the annual meeting of this society.—Mr. B. becomes part owner of ship Putnam, and sails for India.—Anecdote, occurrence a few days after leaving Salem.—Studies during the long voyage.—Begins to study and make notes upon La Place's 'Mecanique Celeste.'—Arrival off Sumatra : difficulties there.—Boarded by English man-of-war.—Revisits Isle of France.—Journal extracts about modes of procuring pepper : seasons for it, &c.—Incident on approaching Salem harbor.—Decision of Mr. B.

On the 28th of October, 1800, Mr. Bowditch married his cousin, Mary Ingersoll. She was destined to live with him thirty-five years, and was the source of much of his happiness in life. She was a person, in some respects, as remarkable as her husband. She was possessed of an extraordinary good judgment, unwearying kindness and love, an elastic cheerfulness, that scarcely any thing could subdue, and very strong religious feelings. She was constantly trying to aid him. Instead of seeking for

enjoyment in display, she preferred economical retirement and great but respectable frugality, in order that her husband might pursue more thoroughly and easily his favorite studies, and might purchase books of science. Instead of collecting beautiful furniture, she called her visiters to see the rich new works of learning, that her husband had imported from foreign lands. Yet, with all this devoted love, with all this intense reverence for his talents and virtues, she remained his true friend, and never shrunk from fully expressing her own opinion upon every matter of duty; and if, perchance, she differed from him, she maintained her side of the question with the zeal of a true saint. It has been often said, that, had Mr. Bowditch been united with a woman of a different temperament, he would have been an entirely different person. He loved study, it was true; but none enjoyed more than he the delights of a family circle. None needed more than he did the kindness of a wife and children. She lived with him many years, and at length, on the seventeenth day of April, 1834, she sunk under the disease, consumption, with which she had been suffering for eight years. She said to her attendant, that the sole source of regret that she experienced was, from the knowledge that she must leave him whom she had loved so long, without the keen sympathies of a wife. Beautifully peaceful was her death. The hour in which she breathed her last was a sad one for Mr. Bowditch. She had watched all his labors. She had urged him onward in the pursuit of science, by telling him that she would find the means of meeting any expense, by her own economy, in her care of the family. She had watched the progress of that great work which, with his dying hands, he afterwards dedicated to her memory. She had listened with delight to all the praises that had come to him, from his own countrymen and foreign lands; and now, when he was full of honor and yet active in business, she was to leave him, her love and her pride, among strangers, comparatively speaking, to the deep emotions of his heart. It was sad to her to die: yet she betrayed no sadness before her family. She was happy in their presence; and the event at last came suddenly upon all.

But I am anticipating my story. For two years after his arrival from his last voyage, Mr. Bowditch remained at home, and engaged as a merchant in commerce. We find him generally in connection with his old friend, Captain Prince, trying his fortunes by adventures of money sent to different parts of the world. He seems to have had no intention of ever again returning to sea. July 14th, 1802, he owned one sixth of a small schooner and its cargo, valued at nine hundred and eleven dollars. During this long residence in town, his fame had increased. He had become known among his fellow citizens as an "able mathematician."* He was therefore appointed to offices of honor and trust. He was a member of the school committee of the town. This boy, who had been obliged to leave school at the age of ten years and three months, was now one to teach others. He was Secretary of the East-India Marine Society of Salem. This Society has now one of the most interesting collections of East-Indian curiosities that can be found in America. The association was composed of the most influential men in the town of Salem. No one could be enrolled among their number unless he had sailed as captain or supercargo of a vessel around either Cape Horn or the Cape of Good Hope. It was intended as a benevolent Society, for the relief of the families of deceased members; and also for the promotion of the art of navigation. Mr. Bowditch was one of its active members. In the early part of this century, the Society was accustomed, on its days of annual meeting, to have a public procession. A description of one of these processions may not be uninteresting to you. I quote the words of an eyewitness of a celebration that occurred two years later than the period of which I am speaking, but the

* From the Manuscript Journal of a gentleman in Salem.

date is unimportant, as the ceremony was the same. "January 4th, 1804. This day was the annual meeting of the East-India Marine Society. As the clergy attend in turn, this occasion afforded me an opportunity to enjoy the day with them. After business, but before dinner, they moved in procession ; but the ice limited the distance. Each of the brethren bore some Indian curiosity, and the palanquin was borne by negroes dressed nearly in the Indian manner. A person dressed in Chinese habits, and masked, passed in front. The crowd of spectators was great. Several gentlemen were invited to dine. Instrumental music was provided in the town, for the first time, and consisted of a bass-drum, bassoon, clarionet, and flute, and was very acceptable. There was no singing." * * * * "It is a most happy arrangement," continues this writer, "to deliver all the papers of this company into the hands of Mr. Nathaniel Bowditch, lately returned from his voyage to India, that they may be prepared for public inspection."

In July, 1802, Mr. Bowditch bought part of a small vessel engaged in a sealing voyage ; but he lost by this adventure half of his investment. In September, of the same year, he, with three others, bought the new ship Putnam, built a short time previously, at Danvers ; and, on the twenty-first of November, he sailed as master, and owner of one small part of the whole ship and cargo, valued at fifty-six thousand dollars. Though he went in the capacity of captain, he was determined to do nothing more than direct the course of the ship ; and leave to the officers under him all the labor usually expected of commanders. He made an agreement with two able and skilful individuals, to take upon themselves these duties. He did so, in order that he might be enabled to pursue his studies more carefully, and without that interruption that must inevitably have occurred, had he been obliged to watch every favorable breeze, or the first appearances of the gathering hurricane. But, as we shall see, whenever real danger called him to duty, he then stood firm, and gave his commands like one who was satisfied that the time required earnestness. A few days after leaving the port of Beverly, he was seen walking "fore and aft" the vessel, with very hurried steps, and deeply absorbed, apparently, in the solution of some problem. The wind had been blowing freshly, for some time ; and, whilst he was meditating, and forgetful of every thing save his problem, the mate of the vessel had been hoping that he would see the severe squall which was coming upon the vessel which was, even then, skimming fiercely over the troubled water. He feared to suggest to him the importance of taking in some of the sails, because the discipline on board ship prevents an inferior officer from interfering with the superior, when the latter is on deck. At length, aroused by the danger of the vessel, he ventured the remark, "Captain, would it not be better to take in the topgallant sails ?" These words aroused Mr. Bowditch from his reverie, and he instantly ordered all hands to duty ; and fortunately, by his activity and energy, was enabled to furl the extra sail before the gust struck the vessel. But this event taught Mr. B. a lesson ; and he gave strict orders to the two officers mentioned above, to waive all ceremony with him, and to take the command of the ship, whether he was on deck or not. This rule was always observed, except on difficult occasions ; and then Mr. Bowditch assumed the authority of commanding officer ; and always, by his calmness and sagacity, gained the respect and confidence of those in employment under him. Before the termination of this voyage, we shall see a strong example of this. But now let us proceed on our expedition with him, and, again cross the Atlantic, pass around the Cape of Good Hope to the islands of the Indian Ocean. But I should premise, that, as he had become more interested in his various mathematical and philosophical pursuits, he had imported from Europe most of the great works on these subjects, and he now was prepared to devote himself more closely than ever to his darling pursuit, the holy truths of mathematical and astronomical science. He was deter-

mined, on this voyage, to undertake the investigation and thorough study of one work on the heavens,—a book which he had understood was above any thing ever before written by man, on that subject. Imagine, if you can, the zeal and beautiful elevation of feeling with which he must have approached this book upon a subject that had interested him from earliest years. Doubtless, he thought not, then, of the fame he was to gain from it. The name of it you will like to know. I shall speak of it again ; but, mean-while, I will merely mention that it was called, 'A Treatise on the Mechanism of the Heavens,'—(Mecanique Celeste,) and was written in French, by a mathematician named La Place,—the greatest scientific man, after Newton, of modern times. But this was not the only work he took with him. He had all the most important works which had been published on the same subject,—they having been imported for him by a bookseller, named Blunt, in payment of services rendered.

These various studies of course influenced his Journal. He doubtless was an observer of passing events ; but he recorded less of them than on the preceding voyages.

By the first record, it appears, that on "Sunday, November 21st, 1802, at one o'clock, P. M., sailed from Captain Hill's wharf, in Beverly. At two, passed Baker's Island lights, with fine and pleasant breeze." This fair weather lasted but a few days, and by far the greater part of the voyage was uncomfortable, in consequence of the prevalence of rain and wind. On January 25th, 1803, he saw the islands of Tristan d'Acunha ; and, whilst coursing along under easy sail, took several observations of them, and made a chart of their various positions.

On the second of May, he arrived among the Pepper Islands, near the coast of Sumatra. He found several American captains there, all actively engaged in loading their vessels with pepper. He had considerable difficulty in making any arrangement with the Rajahs of different places ; but at length, having touched without success at several ports, he began to load at Tally-Poo, on the ninth of May. There he continued until the eighteenth of July, when, by his Journal, it appears that, having wasted a number of days, expecting that more pepper would be brought to the shore, he was informed by the Rajah he would not be allowed any more. Knowing that he should meet with equal trouble at every place on the coast, he concluded to quit it, and call at the Isle of France, on his homeward passage. During their voyage, amid the various shoals and islands which abound here, they met with no inconvenience and no interruption, save that they anchored once or twice, towards night, and, on the twenty-fifth of July, were obliged to bear to, under the fire of two English ships of war,—one named the Royal George, who took the liberty of searching, for the purpose of seeing whether there were any Englishmen on board. The officer, however, was very polite, and the Putnam soon resumed its course ; and, in seventy-two hours more, was on the open sea, under full sail, with the aid of the steady trade-winds of that place and season. On the twenty-fourth of August, the voyager was in sight of the Isle of France. He there met his old friend Bonnefoy, whom he had left there on his first voyage in 1795, and likewise many American friends. After purchasing some bags of pepper, and taking on board some provisions, which employed his time for four days, he sailed for the last time, from any foreign port, on Wednesday, August 31st, 1803. The voyage homeward was very disagreeable, in consequence of much severe weather. Nothing remarkable happened to enliven the scene ; but Mr. Bowditch disregarded the storms and waves ; his mind was calm and tranquil, for he was daily occupied with his "peaceful mathematics." He wrote in his Journal but seldom. There is, however, the following account of the Pepper Islands. "There are several native ports on the northwestern coast of Sumatra, where the Americans trade for pepper,—Analaboo-Sooso, Tangar-Tangar, Tally-Poo, Muckie, &c. ;

and several smaller ports, including about fifty miles of the coast. On your arrival at any of these ports, you contract with the Datoo for the pepper, and fix the price. If more than one vessel is at the port, the pepper which daily comes to the scales is shared between them, as they can agree; or they take it day by day, alternately. Sometimes, the Datoo contracts to load one vessel before any other one takes any, and he holds to his agreement, *as long as he finds it for his interest, and no longer;* for a handsome present, or an increase in the price, will prevent any more pepper from being brought in for several days; and the person who has made the agreement must either quit the port, or offer an additional price.

"The pepper season commences in January, when they begin to take from the vines the small kernels at the bottom. In March, April, and May, is the height of the crop, at which time the pepper taken from the top of the vines is larger and more solid than that gathered at an earlier period. Many suppose that the pepper is all gathered in May; but I was in some of the gardens in July, and found at the top of the vines large quantities, which would be ripe in a few days. The young crop was in considerable forwardness at the bottom of the vines. Some calculate on two crops; but, from the best information I could procure, there is only one.

"The pepper is generally weighed with American scales and weights, one hundred and thirty-three and a third pounds to a *peccul*. What is weighed each day is paid for in the evening,—they (the Natives) not being willing to trust their property in the hands of those they deal with. And they ought to be dealt with in the same manner; it not being prudent to pay in advance to the Datoo, as it would be often difficult to get either the pepper or the money again from him. Spanish dollars are the current coin, but they do not take halves or quarters. They have a pang, or piece, of which we could get but eighty for a dollar at Tally-Poo, though at other places, they give one hundred or one hundred and twenty for the same."

During the whole voyage, as I have already stated, the weather had been very uncomfortable. The approach to the American coast is at all times hazardous, during the winter. The bold and rough shore, the intense cold and severe snow-storms, which make the day shorter even than common, are so many terrors for the sailor. You may judge of the sadness of the crew of the Putnam, when, after a tedious absence of more than a year, they at length, towards the middle of December, 1803, came near the shoal grounds off Massachusetts, by Nantucket. The sleet and rain had been driving over the ocean wave for many days. No sun appeared to guide them by day; no star illuminated the darkness of night. Groping, as it were, in darkness, they coasted along up the shore, yet not within sight of it,—now throwing their sounding line upon Nantucket, and soon afterwards upon George's, shoal. There seemed no end to the storm. At length, on the twenty-fifth of December, they had approached, according to Mr. Bowditch's reckoning, from observation made two days before, near to the outer part of Salem harbor. The night was fast closing in. Mr. Bowditch was observed to be on deck, anxiously looking towards the bow of the vessel, as if in order to see something that would cheer the scene. With clear, decided tones, he gave his orders. The seamen saw, and obeyed in silence. "There is something in the wind," whispered one; "the *old man** is above." "Stand every man at his post," is the command; "and look out for land ahead." The fierce gusts of wind swept over Massachusetts Bay, bearing the vessel irresistibly onwards; the snow-storm increased, and with it, the deep horror of darkness. At length, for one moment, the clouds of drifting snow-flakes parted, and Mr. Bowditch, with his mate, who were watching, saw distinctly the light of Baker's Island. "Light, ho! on the larboard bow," was passed from one to the other, on

* An expression, of which sailors make use, when speaking of the captain of the vessel.

board that ship, in which were many almost breathless with suspense. It was but for a moment, and again all was darkness. "I am right," said Mr. B.; "the direction in which we are now steering will lead us soon into smooth water." His prediction was fulfilled. It was an extraordinary proof of his skill in navigation. He had had no opportunity for observing the sun or moon for three or four days, yet, so accurately had he marked his position in the ocean, at the last time of observing, that, by steering in the direction pointed out by the chart, and observing the rate at which the vessel moved, he was able to calculate so exactly, that, after seventy-two hours of darkness, as it were, he came up to the light as easily as if he had been steering always in open day, with the object distinctly in view. The old tars could not restrain their expressions of admiration; and as, at nine o'clock in the evening, they dropped anchor in safety from the gale that was now beating with tenfold violence outside of the island, they whispered with one another, so that he overheard them, "The *old man* has done well, to-night." It was Christmas night, and, throughout Christendom, the festival in commemoration of the birth of the Saviour had been celebrated, and friends had all been gathered together; but sadness marked their countenances at one home, from which the husband and friend was absent, and had been long expected. As the blasts beat through the streets, and as the family clustered around the bright shining fire upon the hearthstone; as the wind whistled through the casement, the thoughts of the wife were turned from the fireside to the rough ocean on which her husband was tempest tossed. Many weary weeks had she watched; but, day after day, had the sun gone down, and, like Rachel, she could not be comforted. She feared that he was lost. One after another of her friends had left her, late at night, and, finally, she was left alone. Suddenly, she springs up from her seat, aroused by the sound of quick knocking at the street door. She recognises the tap, and in a few moments she is hanging on his neck, from whom she was destined never to be long separated, until death removed her, for four years; and at the end of that time, he was placed in quietness by her side.

[To be continued.]

[From the Fitchburg Sentinel.]

CONVERSATION.

The next means I present for notice, as a most valuable auxiliary to Education, is *Conversation*. And I fear that its importance is generally overlooked. Most men think, that the commission of any wrong act has some influence on their character; but to *speak* ill or well is esteemed of little hurt or benefit. But, in reality, every word, no less than every action, is telling, in a fearfully-increasing ratio of strength, on our characters and our destiny. This is evident from the nature of the mind, and the definition of conversation. Conversation is but the mutual expression of thought; it is merely audible thinking. If, then, purity and correctness of thought be necessary to mental and moral uprightness, no less so is purity and correctness of conversation. As thought reacts upon thought, so conversation reacts on the mind and heart; and what at first was disagreeable to our reflection, by repetition becomes pleasant. The exact degree of influence which our daily words is having upon our character, we may not, indeed, be able to assign; nor may we be conscious, at times, that a certain conversation, or a single expression, used by us, either advanced or retarded, in the slightest point, our spiritual progress. But the effects of repeated conversations and expressions we can perceive. If we have never been accustomed to the use of vulgar or profane language, and are thrown, by circumstances, among those who are loud and frequent in their vulgarity and profanity, although, at first, the coarse and obscene jest, the oath and curse, may shock

our sense of right and delicacy, yet a continued hearing of the same gradually deadens our moral susceptibilities, and we cease to start with horror at the impious and disgusting language. Then we, accidentally or otherwise, utter our first oath or obscene word. Its sound, coming from our own lips, may indeed startle us more than it would, had it issued from our companions ; but, though a momentary thrill of remorse, or a slight and quick blush, may come over us, yet its influence soon fades ; and, gradually, we become accustomed to converse, without scruple, in the same low and profane style with those, whose first-heard impiety and impurity so shocked us.

So, let one, accustomed to elegant and polite language, be thrown among the illiterate and careless of speech, what first struck his ear with pain will gradually cease to excite his notice, and he will, in time, lose his previous habits of accuracy. While our daily experience proves, that frequent conversation tends to assimilate language and style, either to what is chaste, correct, and virtuous, or to what is vulgar, careless, and profane, as the number and influence of the conversers may respectively be ; are we conscious of a different influence, more important than that above related, which is exerted by conversation ?—I mean, the influence exerted on the intellect and soul. I fear we are not ; for, if we were, we would not, could not, join, as we do, in so much idle, frivolous, coarse, and profane, conversation.

Let us examine, first, the effect of petty, idle language, upon the mind and heart.

The necessary parent of great improvement, in life, is reflection ; and this implies solid thinking, reasoning ; without them, it cannot exist. Principles are to be sought out and applied, comparisons instituted, causes and effects examined. For this end, a long and steady view of the subject in question, until it is surveyed on all sides and in all its bearings, is necessary ; and this implies continuity of thought. Now, what effect does the occasional hearing and interchange of the miserable, petty, idle language, so frequent, have on a mind thus endeavoring to think, and reason, and accomplish something useful ? Why, the attention becomes distracted, the chain of reasoning broken, the question under investigation dim, confused, and cloudy; and, if compelled thus to talk and hear, at frequent intervals, and for some time, the powers of the intellect become weakened ; the habit of severe thinking, disagreeable ; the objects of thought, poor and meager. Again, by the strong force of this manner of conversation on the mind, the soul is reciprocally affected. It might have been swelling, in unison with the action of the intellect, in the prospect of lofty plans, carried out for spiritual progress. It might have been the home of noble and generous aspirations and prayers. It was warming and expanding with philanthropy, with a consciousness of its immortal powers, of the duty and happiness of a diligent exertion of those powers. Its scene of vision was enlarging. Its movements were akin to the mind's ; full of activity, and nobleness, and usefulness. It was realizing the solemnity of life. Earth, with its thousand scenes, was passing from view. Advantages, glory, honor, and power, were stripped from man. He stood out, in the majesty of Nature, a being for endless improvement and happiness. The wail of sin was dying in the shouts of conquering virtue. It was sublime, in its conceptions, in its purposes, in its actions. But, beneath the chilling, deadening influence of useless and frivolous words, commonplace inquiries, it sank with the mind ; became narrow, heavy, spiritless ; its life, its enthusiasm, its useful energy, was quenched ; and man and earth seemed to relapse into mere physical agents, created for physical wants, alone. The charm, and nobility, and usefulness, of life was gone.

Again, let us examine the influence of vulgar and profane conversation on the mind and heart. If mere frivolous, idle, trifling conversation has such a powerful effect, what an addition must be made to it, by the union

with the idle, of the impious and obscene, language! The mind becomes the charnel house of pure and virtuous thought; the objects of its action are of the lowest and most degraded kind; delicacy, gentleness, and virtue, flee from its ruined and unhallowed walls. The energy of useful thought and action, stilled by the petty and idle, is destroyed by the blight of obscenity and profanity; and a mind, thus for a time subjected, becomes a burden to its possessor, a curse to the community. What, then, shall we say of the soul, first weakened and crippled, by frivolous and useless conversation, then polluted, desecrated, by oaths, imprecations, low ribaldry, and the most disgusting vulgarity! Words cannot aright describe the horrid state of such a soul. The image of the Creator blotted, trampled upon; lofty powers crushed and obscured; pure, and generous, and virtuous, emotions buried beneath unholy passions; the sanctity and beauty of a well-regulated life unseen, unfelt; gloom, misanthropy, horror, and remorse, filling the places of cheerfulness, philanthropy, contentment, and hope; the long, long day, the weary night, the terror of approaching death and judgment;—these feelings, this state of the heart, may indeed be conceived; but faintly, in proportion to its intense reality.

And let it not be forgotten, that, although few comparatively suffer, to the extreme extent above stated, yet, in proportion as such idle, frivolous, profane, and vulgar, language is indulged in, either in hearing or speaking, is the injury which results to the mental and moral nature. Such, then, being our premises, the conclusion, of necessity, follows, that, in all our daily conversation, whether on business or otherwise, we should strive for purity, for propriety, and for usefulness, of language. Is it asked, are we, then, to renounce all pleasantry in conversation? Are we always to speak in a cold, didactic style? no wit? no laughter? I answer, by no means; but we are always to remember, that every word is aiding our good or bad education; that, for "every idle word a man speaketh, he shall give an account in the day of judgment;" that "words, fitly spoken, are like apples of gold in pictures of silver;" that life is short, and that, to enable us properly to discharge our various duties, we must be reflecting beings; that reason and judgment should rule every expression. Is it further said, your remarks may be correct, but they do not apply to our community?—I answer, without hesitation and with much pain, *they do.* Does not each day's conversation produce objectionable language, to fill a volume? language, which we should blush to pronounce in the company of the pure and chaste? O! it is a saddening scene, to witness day after day spent among us, in trifling, miserable discourse about the most petty affairs; the noble powers of the intellect frittered away, the chasteness and purity of the affections sullied and degraded, by profanity and vulgarity. And I would I could say, this unholy practice is confined to that class, from whom we might expect it. But is it not a fact, that those who claim to be, and are, the first, in point of intelligence, and influence, and wealth, will spend hour after hour, in listening to petty details of pettier trifles; to coarse, ay, the coarsest recitals of obscenity? And the loud laugh and the boisterous shout will attest the sincerity of the pleasure conferred, by what should cause every good and pure mind to weep; and not unfrequently is the oath mingled with this disgusting and horrid recital and shouting.

If such men care not for themselves; if they fear no injury to their own characters; I call upon them to have some regard to the moral and mental wellbeing of the younger portion of the community, who are looking up to them for examples. As they would not aid in the extension of licentiousness, already so frightfully prevalent, in the demolition of the only principle of social wellbeing, purity of language and thought; as they would not aid in obscuring, polluting, and desecrating, the immortal intellect and soul; as they would not prepare for themselves, in the ruin of their children, a melancholy and despairing old age;—I beseech them to desist, to abjure, henceforth, their

coarse and profane conversation, to set a laudable example of saying nothing which does not tend to the best development of the spiritual, the intellectual man; nothing but what is pure, virtuous, and useful. And to the young men of our community I appeal; will you not remember, that soon upon you will rest the stern responsibilities of active life? that, to be prepared for these, you need and must have strong, thinking, reasoning minds? chaste, unsullied hearts? that every hour you waste, in idle discourses upon the thousand nothings of common conversation, in the recital of or listening to foul insinuations, degrading and filthy anecdotes, &c., is creating giant obstructions to obtaining such minds and hearts? And, finally, may I not ask the ladies, and particularly the young,—those who are most in society, and who are exerting great influence upon it,—to lend your services in the restoration of a pure, and simple, and useful, and noble, style of conversation among us? Conversation with you, in company or out, will be of that kind, which is perceived by the gentlemen to be to your tastes, however theirs may differ from yours. If you naturally converse on the little, despicable subjects, too often the theme in ladies' society; if dress, scandal, gossip, and trifles, are seen to be your mental element; be assured, such will be the topics introduced by the gentlemen, when they meet you. If, on the other hand, you should show, satisfactorily, by your language and manner, that you are seeking moral and mental improvement; that solid, useful thought is acceptable to and demanded by your taste; if literature, patriotism, and religion, are subjects frequently present to your thoughts; if you will not waste time, in idling and trifling, and seem determined to do all in your power, to exalt and purify the general tone of conversation around you; if those gentlemen, who cannot or will not share in your thoughts and language, thus raised, and dignified, and ennobled, shall find, by your manner, that they are unwelcome guests, then, a reform will at once commence in those gentlemen who are desirous of mingling in ladies' society,—and who are not? There is a pleasant group of ladies, they will say; we wish much to associate with them; but their tastes and habits of thought are foreign to ours, superior; and we are satisfied, that we should not be pleasant companions, with our present tastes and habits of mind; those, we will, as soon as possible, reform and improve. *And, finally, can I not, with justice and perfect propriety, call the attention of all the members of our community to the fact, of a low and unworthy style of conversation, both in language and subjects; of its immense influence, for evil, on the individual and social character; and the consequent necessity of its thorough elevation and renovation?*

PUBLIUS.

BEAUTIES OF IGNORANCE.

A THIEVES' SOOTHSAYER IN MANCHESTER.—"The public are not perhaps aware how much it is the custom in Manchester, England, for young delinquents, before committing any offence, to consult some dealer in the 'black art' as to the chances of their escape, or detection and punishment. A striking instance of this practice recently occurred in the case of a youth, who, being apprehended in the act of committing a felony, declared that it was not his fault, or from any want of dexterity on his part, that he had been apprehended, but that it was his 'fate;' for that Alexander, the astrologer, had predicted that he (the delinquent) would succeed in three thefts, and be taken in the fourth attempt, and that so it had turned out. Alexander, being immediately apprehended by the police, was found with all the symbols of the 'occult science' upon him; but he denied any knowledge of these, and, from some defect in the evidence against him, he was acquitted. This man (who is held in great reverence and fear by the young thieves in Manchester) is about sixty years of age, and has been, for many years, one of the greatest pests in the town."

[From the Charleston Mercury.]

WRITING MATERIALS.

The most ancient writings of which we have information were upon hard substances,—stone, brick, metals, wood. The Decalogue was engraved on stone. In Greece, Italy, and Egypt, marble, brass, and wood, were used for historical records, monumental inscriptions, laws, and treaties. Hesiod wrote on leaden plates. The ancient Chinese used wooden tablets, as did the Greeks before Homer's time. Afterwards, their plates of wood were coated with wax, and written with the *stylus*. These tablets were used by the Roman boys at school. According to Plautus, one of the boys used one to break the schoolmaster's head.

They were sometimes fastened together, forming a book, or *codex*, from resemblance to the trunk of a tree. Hence the term *code*.

The edicts of the Roman emperors, senate, and magistrates, were on plates of ivory.

Leaves of trees or plants were written upon also, particularly in the East. Hence the origin of the phrase, "the *leaves* of a book," "the Sibylline leaves," *folios*, &c., from *folium*. Linen also was used, as is seen in the wrappers of mummies.

The bark of trees was afterwards used, and is still common in Asia. The inner bark, or *liber*, was used; whence the Latin "*liber*," a book, and the English "*library*." A library, altogether of bark, was recently discovered in Russia. The Saxons used the bark of the beech; and from "*boc*," the Saxon for beech, came our word *book*.

Next was used the papyrus of Egypt; whence our word *paper*. This is a kind of rush, growing in marshy places. It was used not only for paper, but for making cloth, ropes, lamp-wicks, and boats. Moses was placed by his mother in an ark, or boat, made of it. To make paper, the outer rind was peeled off, and the inner coats, or layers beneath, were placed crosswise, moistened, pressed, dried, smoothed, and polished. *Rice paper* is made similarly, from the filmy membranes of the bread-fruit tree.

Parchment and vellum were afterwards introduced, the former made of sheep and goat skins, and the latter of the skins of young calves. There is preserved at Upsal, in Sweden, a manuscript copy of the Gospels, in the Gothic translation of Ulphilas, first Bishop of the Goths, on violet-colored vellum, lettered in silver and gold, and bound in massy silver.

Most of the ancient manuscripts extant are on parchment.

Paper made of cotton was introduced by the Arabs into Spain. How long it had been used in the East is unknown. About the middle of the fourteenth century, linen paper was substituted, which also was introduced into Europe from the East, where it had been used for centuries. Most of the old Oriental manuscripts are upon such paper. The oldest English manuscript on linen paper is dated 1340.

The chisel was used to engrave on stone. To write on bark, soft wood, or waxed tablets, the stylus was used; whence our word *style*. This was made of iron, sharp at one end, to mark with, and flat at the other, to rub out or erase. They were employed sometimes as daggers. Cæsar, when attacked by his murderers, defended himself with one of them. The boys at school sometimes rose on their masters with them. Some persons derive the Italian word *stiletto* from the stylus.

Reeds or canes were used to write on softer substances, the Egyptian *calamus* being preferred. It was pointed out and split like a pen, and left the writing rough and uneven. Pens made of quills came next, their use originating in Europe, and first mentioned in the seventh century. Reeds and canes are still used by some writers in the East, but the goosequill is the preeminent instrument of modern times.

The ancient inks were superior to the modern, in beauty and variety of color. Besides inks of all colors, the ancients used gold and silver inks, in which capitals, titles, and emphatic words were written, in most manuscripts of the middle ages.

Most old manuscripts are without points, or spaces between the words; but there are many exceptions, and sometimes there is a period after every word.

Originally, they wrote from right to left, instead of the present way, which is called the Ionic method. Afterwards, they wrote backward and forward; *bostrophedon*, as the ox ploughs. The Chinese write perpendicularly down, in columns of single words.

The form of letters varied in different centuries. At first, all the letters were capitals. Small letters were introduced in the fourth, but were not in general use before the tenth, century. By the peculiar form of the letters, the age of manuscripts is distinguished with great accuracy, from century to century.

The parchment, paper, or other flexible material of ancient writing, was rolled up into a scroll, or *volumen*; whence the word volume. The sheets, written only on one side, were united at the edges, so as to form one long strip, rolled up on a stick, like a map. Of every work, only one book was included in each volume; and in general, one of our modern volumes would include many ancient ones. Hence the great number of volumes in the ancient libraries.

The present form of books is also very ancient. It is traced back to Pergamus, who first used parchment extensively, and was generally adopted after the time of Augustus, except among the Orientals. Only a small number of extant old manuscripts are in rolls, which is called the Egyptian mode of binding.

Julius Cæsar introduced the method of folding letters and dividing them into pages, in the style of modern books.

The Romans preserved their more precious books in cedar boxes. Hence the praise, "*worthy* of the cedar." The oil of cedar was also rubbed over books, to preserve them.

Transcribing was the only ancient process of multiplying books.

The ancient literature would have been wholly lost, had it not been for the Christian religion, and the institution of monasteries. In the dark ages, the monks were the only transcribers. Few laymen could write even their own names; they made their mark. Charlemagne, and several other European monarchs of those times, could not write. The monasteries, being respected in war, were also safe depositories for books. Besides copying, the art of embellishing, or illuminating, was practised by the monks.

The monks, however, destroyed many valuable writings, by obliterating them, and using the same parchment for writing or copying works of less or no value. The revival of letters put a stop to this destructive process. *Cicero de Republica* was thus washed out and *written over*, but was restored by a chemical process. A commentary of St. Augustin on the Psalms had been written over the erased or washed-out writing of Cicero, and the veneration in which the saint was held probably contributed to the preservation of the manuscript.

THE SCHOOL LIBRARY. Nineteen volumes of the Larger Series, and eleven of the Juvenile Series, have been published by Marsh, Capen, Lyon, & Webb.

[THE COMMON SCHOOL JOURNAL; published semi-monthly, by *Marsh, Capen, Lyon, & Webb*, No. 109, Washington street, Boston: HORACE MANN, Editor. Price, One dollar a year.]